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The Association Between Auditor Size and Bank Regulator Ratings*

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The banking industry provides a unique opportunity to examine the effects of auditor choice on regulators. In banking, regulators provide (to bank directors and management) a direct measure of bank soundness based on predetermined, regulatory definitions and on-site examinations. The results of these regulatory assessments have immediate consequences for the bank. Bank regulators examine the quantity and quality of assets and liabilities and assess the adequacy of record-keeping and management controls. The choice of a high quality auditor potentially improves the reg-

ulators' evaluation of management control. Less directly, high quality auditors may enhance the regulators' assessment of assets and liabilities. In addition, choice of a high quality auditor indicates managers' willingness to be thoroughly reviewed and signals managers' competence and confidence. Accordingly, we consider the relation between regulatory evaluation results and auditor quality.

The empirical results suggest that auditor quality affects regulators' assessment of banks' financial condition. The choice of a Big 5 auditor is positively related to an overall bank

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rating, after controlling for the effects of other monitoring mechanisms and the underlying economic characteristics of the bank. We believe this result reflects regulators' response to the contribution of high quality auditors to the management control system, assets and liability measurement, and managers' signal of manager confidence. Bank managers' choice of a low quality audit firm prompts regulators to reduce their rating of the management control system, to increase suspicion of assets and liability measurement and/or to decrease their confidence in management.

BACKGROUND ON BANKING REGULATION

An important and effective tool of bank supervision and control is the bank examination. The bank examination process is the Federal Reserve's fact-finding arm in discharging its responsibilities (to safeguard depositors and prevent bank failures). The essential objectives of an examination are: (1) to provide an objective evaluation of a bank's soundness and compliance with banking laws and regulations, (2) to permit the Federal Reserve to appraise the quality of management and directors and (3) to identify those areas where corrective action is required to strengthen the bank, to improve the quality of its performance and to enable it to comply with applicable laws, rulings and regulations (Federal Reserve *Commercial Bank Examination Manual*, Section 1.1: 1).

Bank examinations generally occur once a year and require anywhere from a few days to several weeks. Examinations involve surprise, on-site visits by the regulators. The Federal

Deposit Insurance Corporation Improvement Act of 1991 requires annual full-scope, on-site examinations. The exam period is extended to 18 months for well-managed, well-capitalized banks with less than \$100 million in assets. The following two components of the examination process are addressed: (1) the recognition and evaluation of risks and (2) the responsibility of examiners to influence bank managers to take action. Examiners confirm the quantity and appraise the quality of all asset and liability accounts, evaluate bank operations and ensure compliance with regulations. They assess the adequacy of record-keeping and management controls (including external audits). On the basis of these reviews, the examiner rates the overall soundness of the bank by comparing its capital to its risk. Note that many of these activities are also performed by the external auditor.

Examiners rank banks on each of five performance dimensions: (1) Capital adequacy, (2) Asset quality, (3) Management, (4) Earnings and (5) Liquidity. The acronym CAMEL is used to describe the system. Each bank is assigned a rating between one (the best) and five (the worst) on each of the criteria and an overall rating. The overall CAMEL rating is not a weighted combination of the individual CAMEL ratings, but represents the examiners' summary impression of the bank (Cargill, 1989).

Empirical evidence suggests that investors have more confidence in bank financial reports following regulatory assessments. News about a regulatory examination is likely to leak to the public. While examination results are not public information, financial reports released soon after the examination are likely to be more

accurate. Empirically, they find that inspections increase the market value of the bank's equity by reducing the uncertainty of reported values. Similarly, Berger and Davies (1998) and DeYoung *et al.* (1998) find the regulatory assessments contain information useful to the market even though the assessments are supposedly confidential.

From the perspective of bank owners, the punitive costs of poor examination results elevate the status of regulators as a concerned bank constituent. From the perspective of bank managers, the possibility of direct regulatory intervention by the Federal Reserve also elevates the status of the regulator. Houston and James (1993) document regulatory effectiveness in terms of one enforcement activity, namely, to discipline poorly performing managers. Houston and James find that the frequency with which regulators remove top management from financially troubled banks is similar to the frequency with which non-regulatory monitors take such actions in other distressed firms. Among banks announcing senior management changes, asset sales, changes in dividend policy, acquisition activity or any oversight activity, the chief executive officer was replaced in 33.6 percent of the institutions. To further explore the influence of regulatory activity, Houston and James compared the frequency of turnover among firms that were not subject to oversight (22 percent) to the turnover rate in firms subject to regulatory oversight (70 percent). Additionally, the cost of these actions to the subject managers, in terms of lost income and future opportunities, is substantial, suggesting that bank managers bear the consequences of financial distress.

In summary, the uniform system of CAMEL ratings is a ranking measure used to identify troubled banks. The higher the CAMEL rating, the more regulatory attention the bank receives. Black *et al.* (1978) point out that troubled banks receive more regulatory attention than non-troubled banks. If the regulator dedicates more effort to a troubled bank, and the respective bank management spends more effort responding to regulatory concerns, then the increase in regulatory attention should be reflected in a real increase of bank and regulatory costs. Poor bank ratings also impose costs in terms of restrictions on bank activities, prohibition of mergers and acquisitions and even branch or bank closure. These incremental costs may provide an incentive for managers and regulators to rely upon audit quality as a way to mitigate these costs. In the next section we discuss these cost effects and how they lead to predictable hypotheses about the relation between audit quality and regulatory assessments.

THEORY AND HYPOTHESIS

Regulatory Costs

Increased regulatory attention is costly to the bank and its management. Banks incur two costs related to more frequent or more detailed examinations. First, the insurance premium paid to the Federal Deposit Insurance Corporation (FDIC) is a risk-related charge. The charge is based on qualified deposits at the bank and adjusted for risk using the CAMEL rating. Typically, national banks pay about \$1.25 of insurance premium for every \$100 of deposits. An example of the impact of CAMEL ratings on insurance premiums is

provided in Cocheo (1995). Cocheo (1995) reports that in 1993 examiners issued higher (i.e., poorer) CAMEL ratings for the National Bank of Rising Sun, Rising Sun, Md., a small bank with about \$83 million in assets. During the next six months, FDIC insurance premiums increased by \$13,500 due to the poorer CAMEL ratings.

A second cost from increased regulatory attention is the fact that bank staff and management are distracted from their normal responsibilities to prepare reports, gather documents and respond to questions. Additionally, receiving poor CAMEL ratings from bank examiners restricts the bank managers' ability to raise capital, reduces the managers' compensation, limits the accumulation of human capital, and decreases the managers' credibility (Cargill, 1989). Williams and Jacobsen (1995) report that banks spend up to 14 percent of their noninterest expenses on costs directly associated with complying with regulatory requirements. Thus, increased regulatory effort during the review process and the receipt of poor CAMEL ratings are costly to the bank and its managers, suggesting managers have incentives to take action to reduce regulatory attention. One of those actions could be to rely more on, or hire, a high quality auditor.

Regulators also have reasons to be concerned about their costs and, therefore, may look for opportunities to reduce costs (i.e., rely more on auditor output). First, government budget constraints discourage regulators from overrunning bank examination budgets without good cause. Deficit spending must be approved by lawmakers, which provides an incentive for government agents to control

costs. Second, regulators are concerned with political costs. Poor performance or ineffective regulatory reviews can provide competing electoral candidates with an opportunity to attack the regulatory function. The economic consequences of a bank failure direct attention to the regulatory system. If the failed bank was given poor evaluations (i.e., high CAMEL ratings) prior to the bankruptcy, then the regulator is less likely to be blamed, and the regulatory system is less likely to come under attack, and is possibly praised as an effective warning device. On the other hand, regulators responding positively to the demands of political constituents can garner public support and, therefore, enhance job security if the public believes their efforts prevent bank failure. In summary, regulators have incentives to be concerned about examination costs in light of how much regulatory attention is given to banks. Audit quality may provide a mechanism for bank examiners to reduce costs without decreasing the overall monitoring of bank condition.

Theoretical Framework for the Effects of Audit Quality

The audit process, in general, has been shown to improve internal and organizational controls. Wallace (1980) asserts that the audit process deters fraud by creating the threat of discovery. Auditors' review of the internal control system improves the control environment and helps eliminate carelessness. Auditors not only find errors, but also recommend process improvements; auditors typically issue a report to management containing suggestions and recommendations for improving the accounting system and process.

A number of theoretical and empirical studies have argued that large or Big 5 auditors are recognized as brand name suppliers of audits and that these audits are perceived to be of higher quality (e.g., DeAngelo, 1981; Simunic and Stein, 1987; Schwartz, 1997; Solomon *et al.*, 1999). In this study we rely on DeAngelo's (1981) seminal theory of auditor reputation that uses traditional agency theory to describe why larger auditors have incentives to provide high quality services. She argues that in order to maintain their investment in reputation capital, larger firms will provide higher quality services. Due to their size, larger auditors have the resources to invest more in personnel training and technology and, therefore, have greater skill in developing internal controls for clients and detecting breaches of the accounting system. Also, due to their size, larger auditors are less dependent on any given client for fee revenue and thus can be more resistant to client pressures in reporting accounting breaches, increasing the auditors credibility with non-management constituents. In summary, larger auditors have better accounting skills and are more independent, which ultimately creates brand name reputation.

Our study extends DeAngelo's (1981) theory to the regulator as a constituent of the bank who relies on audit quality. The role of the auditor in our model is based on the effect of auditor reputation on the regulator's perception (i.e., the credibility of the auditor's opinion) and the skill and ability of the auditor to improve management and organizational control. Adopting DeAngelo's (1981) theory for banking firms, a high quality auditor has a greater probability of improving accounting controls and de-

tecting accounting breaches because of greater accounting skills, and has a greater probability of reporting a breach because the auditor is larger in size (i.e., size enhances independence). We also suggest that since management has significant influence in hiring the auditor, the choice of a large, high quality auditor also indicates management's willingness to undergo a rigorous review which sends a signal to all constituents that management is confident and competent in its financial management and reporting.

Our prediction of the effect of audit quality on regulators is developed as follows. If regulatory examiners value the certification work of external auditors, they may rely more on audited financial reports, limiting their own work and improving their evaluation of management controls and financial results. Bank managers, realizing these effects, may influence the extent of the regulatory examination by selecting high quality auditors. Since previous research indicates high quality auditors improve the reliability of both financial statements and internal control systems, auditors may then influence the examiners' perception of the bank's financial condition and the quality of its management. Thus, we expect to see a positive, significant relation between auditor quality and regulatory evaluation results. Our hypothesis, stated in alternative form, is:

H₁: Regulators' evaluations are positively influenced by managers' choice of high quality auditors.

RESEARCH DESIGN

Model

To test our hypothesis, we would ideally examine how CAMEL ratings

are associated with proxies for audit quality. CAMEL ratings are a direct output measure of the regulator's on-site examination and are based on objective and subjective measures of bank financial condition. Auditor choice is not explicitly defined as an input to the CAMEL in the regulatory process, but could be incorporated subjectively through the regulator's personal judgment. However, CAMEL ratings are not publicly available. The results of bank examinations are intended for bank directors and management only. The privacy of these reports is enforced in the banking industry.

Instead we use ratings provided by the Sheshunoff Service for the year 1996. The Sheshunoff ratings provide an objective composite measurement of historical bank performance based on four of the five CAMEL factors: Capital Adequacy, Asset Quality, Earnings, and Liquidity (Sheshunoff does not calculate a rating for Management). The Sheshunoff ratings are calculated using publicly available financial information obtained from the release of the preliminary reports of condition (analogous to a balance sheet) and reports of income (analogous to an income statement) from the Federal Reserve Call Reports. Thus, these ratings are mathematically derived and do not include a subjective evaluation of bank management. However, two factors suggest that the Sheshunoff rating can acceptably proxy for the overall CAMEL rating. First, the composite Sheshunoff rating focuses on the bank's health and potential for failure, rather than current performance. Both the measures selected for Capital Adequacy, Asset Quality, Earnings and Liquidity and the weighting of those measures are sta-

tistically determined to yield a measure of the probability of long-term success. Second, all raw scores are compared to a five-year industry average by placing each institution's raw score on the industry representative (normal) distribution to determine each bank's rating. This process ensures that the bank's rating reflects its true condition (i.e., healthy banks will not be penalized with a low rating simply because other institutions have higher numbers). These two computational steps help to enrich the raw data and make the Sheshunoff rating a more suitable proxy for the CAMEL rating.

Although the Federal Reserve was unwilling to release CAMEL ratings for our sample period, we did obtain CAMEL ratings for 58 of the largest banks from 1984 to 1986. These CAMEL ratings were obtained by Dr. Chris James while he was a visiting scholar at the Federal Reserve Bank of San Francisco and have been used in previous studies (James, 1988; Cargill, 1989). The Pearson correlation coefficient between the overall CAMEL rating and Sheshunoff ratings during the 1984 to 1986 time period is -0.752 ($p\text{-value} < .01$), indicating that Sheshunoff ratings have a high, negative correlation with CAMEL ratings, which again suggests that the Sheshunoff ratings are a reasonable proxy for CAMEL ratings.

We would like to use Dr. James' sample of 58 banks from 1984 in our analysis, but there are a number of important limitations to the data. First, the sample is small (only 58 versus 252 banks in the current study), which reduces the power of our tests. Second, and most importantly, is the lack of variation in the auditor choice variable: all 58 banks from the 1984 sample used a Big 5 auditor (Big 8 at

that time). This limitation prevents us from using the traditional Big 5/Non Big 5 dichotomy as a proxy for audit quality. Third, as the largest 58 banks in the U.S. at that time, this sample is not a random draw from the general population of U.S. banks. This would reduce the external validity of testing. Fourth, the structure of the auditing and banking industries has changed as both industries have consolidated significantly. To make our study contemporaneously relevant, we examine a current sample of banks and auditors. Since the algorithm to calculate Sheshunoff and CAMEL ratings has not changed over time, we expect the correlation between Sheshunoff and CAMEL ratings to be stable, suggesting that Sheshunoff ratings are a reliable proxy for CAMEL ratings.

Since the Sheshunoff ratings are an objective combination of the four weighted CAMEL factors, the use of an audit quality proxy as a direct input factor to the Sheshunoff rating is excluded. We argue, however, that audit quality indirectly affects the Sheshunoff rating by directly affecting the individual CAMEL factors. Informal discussions with regulators indicate that they are aware of the auditor's reputation and the extent of the auditor's work. While we believe that audit quality is a subjective factor in the CAMEL ratings, we assume that its affect is direct. Because the correlation between CAMEL and Sheshunoff ratings indicates an inverse relationship, we suggest the following system of linear equations:

$$\begin{aligned} \text{RATING} &= \alpha_{10} + \alpha_{11}C + \alpha_{12}A + \alpha_{13}E + \alpha_{14}L \quad (1) \\ C &= \beta_{20} + \beta_{21}X_2 + \beta_{22}\text{AUDITOR} + \varepsilon_2 \quad (2) \\ A &= \beta_{30} + \beta_{31}X_3 + \beta_{32}\text{AUDITOR} + \varepsilon_3 \quad (3) \\ E &= \beta_{40} + \beta_{41}X_4 + \beta_{42}\text{AUDITOR} + \varepsilon_4 \quad (4) \\ L &= \beta_{50} + \beta_{51}X_5 + \beta_{52}\text{AUDITOR} + \varepsilon_5 \quad (5) \end{aligned}$$

RATING is the Sheshunoff peer or national composite rating; C, for capital adequacy, is core capital as a percentage of assets; A, for asset quality, is adjusted nonperforming assets as a percentage of total assets; E, for earnings, is the return on average assets; L, for liquidity, is liquid assets as a percentage of total liabilities; X_i is a vector of bank characteristics and performance measures such as profitability, size, risk, and operational complexity that affect the i^{th} CAMEL factor (specifically, C, A, E, or L); and AUDITOR is a measure of audit quality. Equation (1) does not have a disturbance term since the relationship between the Sheshunoff rating and the CAMEL factors is exact or deterministic. Equations (2) through (5) include a stochastic disturbance term ($\varepsilon_i \sim N(0, \sigma^2 I_T)$) since these relationships are not deterministic and may be measured with error. Substituting equations (2), (3), (4), and (5) into equation (1) provides the following single equation:

$$\text{RATING} = \gamma_0 + \gamma_1\text{AUDITOR} + \gamma_2X_i + \varepsilon_i \quad (6)$$

Expanding equation (6) to include variables for bank characteristics and performance measures provides the following testable regression equation:

$$\begin{aligned} \text{RATING} &= \gamma_0 + \gamma_1\text{AUDITOR} + \\ &\gamma_2\text{ROE} + \gamma_3\ln\text{ASSETS} + \gamma_4\text{RBA/TA} \\ &+ \gamma_5\text{BRANCHES} + \varepsilon_i \quad (7) \end{aligned}$$

Variables

The dependent variable, RATING, is the 1996 peer or national Sheshunoff rating. This is a percentile ranking (99=best, 0=worst), within the bank's peer group or on a national basis, based on a weighted composite score which represents four of the five CAMEL factors (C, A, E, and L).

AUDITOR, a proxy for audit quality, is a categorical classification based on auditor size (Big 5 versus non-Big 5). As discussed previously, DeAngelo (1981) argues that the size attribute of large auditors allows them to be independent and skillful, which ultimately lets them provide high quality audits. Big 5 auditors are the largest five auditors measured by total fee revenue or assets audited. If regulators perceive the auditing work of Big 5 auditors to be of higher quality, they will place greater weight on the financial disclosures. Given the incentives of bank managers to choose a high quality auditor and the incentives of regulators to rely on the auditor's work (discussed previously), we expect the sign on the AUDITOR variable to be positive. AUDITOR is the variable of interest.

The remaining variables are controls. ROE (Return On Equity) controls for bank performance, which is likely to be an important determinant for all CAMEL factors, but certainly for the E rating since current earnings are added to equity at the end of the operating period. It could be that Big 5 and Non-Big 5 clients differ because of differences in the underlying economics of the bank. If these differences are important for regulator's evaluations, a difference in regulatory evaluations may result even if auditor class is not relevant. Adjusting for these underlying economic factors in the regression is important in order to measure the incremental effect of auditor class on regulatory evaluation. We expect regulators to take a favorable view of higher levels of bank performance. Thus, ROE should be positively related to the Sheshunoff rankings.

Previous research (Atiase, 1985 and El-Gazzar, 1998) shows that size

is a proxy for the strength of public monitoring (also referred to as the disclosure environment). Larger firms are more closely monitored because of larger investor and analyst following. The monitoring provided by these external agents may be correlated with auditor monitoring and should be controlled. Also, capital assets are specifically used in calculating the CAMEL rating. To determine whether auditor class has incremental explanatory power over assets, we include the natural log of total bank assets (lnASSETS) as a size proxy. The natural log is used to correct for heteroscedasticity commonly found in the distribution of firm assets. We expect it to be positively related to the Sheshunoff rating.

Banks explicitly provide direct measures of risk for their assets. Risk should be controlled since it is likely to be a determinant of the liquidity of a bank's portfolio, which is one of the CAMEL rating factors, and has been theoretically and empirically documented as a factor explaining auditor choice (Titman and Trueman, 1986; Datar *et al.*, 1991). The Basle Agreement (accepted by the Federal Reserve in 1992) provides a methodology for computing risk-weighted assets. This methodology focuses only on credit risk in calculating risk-based assets. Other types of exposure such as interest rate, liquidity, and funding risks, as well as asset quality problems, are not factored into the risk-based calculation. Risk-based asset reporting is a mechanism that weights the relative value of assets held in a bank's portfolio by the risk level associated with these assets. A basic premise in the Basle Agreement is that the riskier a bank's assets, whether they are on or off the bal-

ance sheet, the more capital is required to support them.

According to the Basle Agreement, risk-based assets are determined by assigning the bank's assets to one of four risk categories. Category 1 includes cash and cash equivalents, category 2 includes short-term claims maturing in one year or less, category 3 includes family residential mortgages or public sector bonds, and category 4 includes commercial and consumer loans. We treat reported risk-based assets as a direct measure of the bank's riskiness. We scale risk-based assets by total assets (RBA/TA) to get a percentage measure of assets discounted due to loan uncertainty. Thus, lower percentages of risk-based assets (lower percentages implies greater discounts) would represent greater levels of risk and would adversely affect regulator's evaluation of bank financial condition. We expect the variable RBA/TA to be negatively related to higher Sheshunoff RATINGS.

Finally, we use the number of bank BRANCHES to measure the complexity of bank operations. Firm complexity has been shown in previous studies to be correlated with auditor class (DeAngelo, 1981; Simunic, 1980; Craswell *et al.*, 1995). Geographically dispersed bank branch offices make it more difficult for regulators to assess the safety and soundness of the bank's assets. If bank complexity reduces the regulator's inclination to assign favorable CAMEL ratings, then we expect the number of bank BRANCHES to be negatively related to the Sheshunoff RATING.

RESULTS

Descriptive Statistics

Table 1 reports means and standard errors for the sample parti-

tioned by auditor type (Big 5 versus Non-Big 5). The sample is composed of 199 firms choosing a Big 5 auditor and 53 firms choosing a Non-Big 5 auditor. The sample observations are a random selection from the Sheshunoff database, and include both publicly-held and nonpublicly-held banks.

The mean Sheshunoff RATING is higher for the Non-Big 5 group than the Big 5 group. The difference, however, is marginally significant for the national measure only (p-value = .093). While these comparisons are not consistent with our argument, they are univariate comparisons only, which may not measure the incremental effects of one factor if the effects of other factors are not controlled. The economic effects of bank condition could easily swamp the effects of audit quality. Thus, controlling for bank economic condition is critical before making inferences about the effects of auditor choice on regulatory evaluation. Also, a univariate analysis is not sophisticated enough to capture the two-step effect developed above in equations (1) through (6). Consequently, we place no confidence in the univariate tests and provide a multivariate analysis in the next section based on our system of equations.

Although we make no predictions about the CAMEL factor inputs to the Sheshunoff rating, it is interesting to note that the mean capital adequacy ratio is statistically higher for the Non-Big 5 group than the Big 5 group (.0978 versus .0884, respectively; p-value = .003 for the difference). This difference may reflect size effects. Differences in the other CAMEL factor inputs (asset quality, earnings quality, and liquidity ratio) are not statistically significant across auditor type.

Total assets (ASSETS) and the number of branches (BRANCHES) are sta-

Table 1
Descriptive Statistics

Variable	Means for Banks with Big 5 Auditors (Standard Error) n = 199	Means for Banks with Non-Big 5 Auditors (Standard Error) n = 53	Difference in Means (p-value)
RATING (National Percentile Ranking)	53.0950 (1.2697)	57.7736 (2.4665)	-4.6786 (.093)
RATING (Peer Group Percentile Ranking)	55.5918 (1.2880)	59.2692 (2.5006)	-3.6774 (.192)
Capital Adequacy (Ratio)	.0884 (.0015)	.0978 (.0028)	-.0094 (.003)
Asset Quality (Ratio)	.0164 (.0014)	.0123 (.0027)	.0041 (.191)
Earnings Quality (Ratio)	.0185 (.0007)	.0186 (.0014)	-.0001 (.979)
Liquidity Ratio (Ratio)	.0585 (.0025)	.0535 (.0048)	.0050 (.364)
ROE (Ratio)	.1388 (.0048)	.1331 (.0095)	.0057 (.589)
ASSETS (k\$)	8871346 (1935245)	440603 (3749941)	8430743 (.047)
RBA (k \$)	6698999 (1496668)	286421 (2907384)	6412578 (.050)
RBA/TA (Ratio)	.6735 (.0084)	.6434 (.0164)	.0301 (.105)
BRANCHES (Count)	78.9400 (11.657)	11.0943 (22.645)	67.8457 (.008)

Variable Definitions:

RATING (National or Peer Group) = Sheshunoff rating on national or peer asset basis. Capital Adequacy = Core capital as a percentage of assets. Asset Quality = Adjusted nonperforming assets as a percentage of total assets. Earnings Quality = Return on average assets. Liquidity = Liquid assets as a percentage of total liabilities. ROE = Return on common equity. ASSETS = Total bank assets in thousands. RBA = Risk-based assets (Assets adjusted for credit risks based on the Basle Agreement). RBA/TA = Risk-based assets divided by total assets. BRANCHES = Number of branch offices per bank reported in the bank call reports.

tistically higher for the Big 5 group than the Non-Big 5 group, which is consistent with previous research that finds Big 5 auditors associated with bigger and more complex clients (Palm-

rose, 1986; Simunic, 1980). The proportion of assets discounted due to risk (risk-based assets as a percentage of total assets) is significantly greater for the Non-Big 5 group, suggesting that they

carry more credit risk than the Big 5 group. This is consistent with previous research that finds higher client-specific risk is associated with low quality auditors (Titman and Trueman, 1986).

We perform a Pearson correlation to assess the potential for multicollinearity among the independent variables (results not presented). With the exception of the Rho coefficient for BRANCHES and lnASSETS, none of the correlations among the variables which will be used as independent variables in the multivariate regression is greater than .36. The correlation between BRANCHES and lnASSETS is .66; however, variance inflation factors for all of the independent variables are less than 1.4, indicating that harmful collinearity probably does not exist.

In summary, the univariate statistics suggest that auditor choice is significantly associated with differences in regulatory assessments. Although these univariate comparisons are not consistent with our predictions for audit quality, a multivariate analysis that controls for other effects on the dependent variable may provide different results. Two of the four control variables are significantly associated with the dependent variable, national RATING, and three of the four control variables are significantly associated with the dependent variable, peer group RATING.

Multivariate Results

Coefficient estimates from multivariate regressions are presented in Tables 2 and 3. In Table 2, the dependent variable RATING is defined as the bank's percentile ranking among all national banks as determined by the Sheshunoff rating service. The overall model is significant (zero slopes F-sta-

tistic = 24.52, p-value <.01) and has significant explanatory power with an adjusted R² of 31.9%. Coefficients on control variables for bank characteristics, lnASSETS for bank size and BRANCHES for bank complexity, are not significant. However, coefficients on control variables representing performance, ROE for profitability and RBA/TA for asset quality, are significant at traditional levels in the expected direction. ROE and RBA/TA have positive signs, indicating that higher returns and less risky loan portfolios have a favorable effect on regulator's evaluations.

The coefficient on the variable of interest, AUDITOR, is positive and significant (p-value = .01). Regression results for RATING, defined as the bank's peer-group percentile ranking, are very similar to the national rating results (see Table 2). In this regression, the coefficient on AUDITOR is positive and significant with a p-value of .01. Both sets of estimates indicate that audit quality, proxied by auditor size, has a favorable effect on regulators' assessment of banks' safety and soundness. High quality auditors (versus low quality auditors) enhance the credibility of the bank's financial assertions, allowing the regulator to place greater reliance on reported financial performance and improving the regulators' assessment of control systems.

DISCUSSION

The Federal Deposit Insurance Corporation Act of 1991 (FDICA) requires bank managers (CEO and CFO) to report on the adequacy of the bank's internal control structure and financial reporting procedures. In addition, FDICA requires independent auditors to report on the assertions made by managers with respect to internal con-

Table 2
Regression Results
Dependent Variable is National Percentile Rating

$$\text{RATING} = \gamma_0 + \gamma_1 \text{AUDITOR} + \gamma_2 \text{ROE} + \gamma_3 \text{lnASSETS} + \gamma_4 \text{RBA/TA} + \gamma_5 \text{BRANCHES} + \epsilon_i$$

Variable	Estimate	Standard Error	T-Statistic	P-Value
INTERCEPT	32.126	11.604	2.77	.01
AUDITOR	2.862	1.244	2.30	.01
ROE	144.094	14.106	10.22	.00
lnASSETS	-.449	.889	-.50	.61
RBA/TA	14.507	8.429	1.72	.05
BRANCHES	.004	.007	.53	.29
Model:	n = 252	Adj. R ² = .319	F-Value=24.52	P-Value < .01

Variable definitions the same as Table 1.
One-tail test except for lnASSETS.

Table 3
Regression Results
Dependent Variable is Peer-Group Percentile Rating

$$\text{RATING} = \gamma_0 + \gamma_1 \text{AUDITOR} + \gamma_2 \text{ROE} + \gamma_3 \text{lnASSETS} + \gamma_4 \text{RBA/TA} + \gamma_5 \text{BRANCHES} + \epsilon_i$$

Variable	Estimate	Standard Error	T-Statistic	P-Value
INTERCEPT	28.854	11.672	2.47	.01
AUDITOR	2.788	1.252	2.23	.01
ROE	146.106	14.189	10.30	.00
lnASSETS	.043	.895	.05	.96
RBA/TA	12.583	8.479	1.48	.07
BRANCHES	.004	.007	.59	.28
Model:	n = 252	Adj. R ² = .325	F-Value=25.23	P-Value < .01

Variable definitions the same as Table 1.
One-tail test except for lnASSETS.

trols. Also, managers must document, and independent auditors must report on, bank compliance with safety and soundness regulations. Our empirical results indicate that auditor quality influences the review work of regulators. These results suggest the feasibility of further collaboration between external auditors and regulators.

The continued co-existence of bank regulators and auditors supports the notion that the two provide differentiated services. The demand for auditing arises out of the need to monitor contracts which rely on financial information. Managers engage auditors to certify contract compliance. To this end, auditors issue opinions which are distributed, with financial statements, to shareholders. Thus, auditors serve to verify financial information used in regulating the distribution of wealth between managers and shareholders. In contrast, government regulation of banks derives from the need to protect the public from unfair allocations of wealth. Bank managers submit to on-site regulatory examinations by order of law. Consistent with their charge, regulators submit reports only to the bank's board of directors and the focus of the report is correction. Consequently, regulators have enforcement powers to ensure compliance with their instructions and, therefore, certify the soundness of the bank (and the system) without issuing public notice.

While the differentiated roles of examiners and auditors persist, our empirical analysis suggests they may cooperate to ensure the credibility of bank financial information and the long-term survival of the institution. FDICA expands the exchange of documents between external auditors and regulatory examiners to include reports on the internal control system. Empirical support of the influence of

auditor quality on regulatory examination results prompts the consideration of further cooperation between auditors and regulators. Despite their unique characteristics, auditors and regulators have a lot in common. Both perform on-site reviews of bank financial information, control systems and management. Both are concerned with the credibility of bank financial reports and the institution's long-term survival. Practitioners should investigate further opportunities for explicit cooperation between auditors and regulators. To the extent such cooperation reduces total examination costs without compromising regulatory oversight, regulators, bank managers and shareholders benefit. Auditors can also benefit from the increased efficiency of cooperative efforts.

The investigation of further cooperation has implications not only for practitioners (auditors and regulators), but also for researchers. Two avenues of additional research are evident. First, we can look for other bank monitors who perform duplicative services. Further opportunities for cooperation can be identified in an effort to reduce total monitoring costs. For example, investors in mortgage-backed securities may provide repetitive examinations of subject assets. A second research stream examines similar duplicative monitoring in other regulated industries. For example, utility companies face substantial regulatory scrutiny. Further research can examine possible savings generated by the cooperation between independent auditors and utility regulators.

The generalizability of industry-specific research is limited. The unique character of bank regulation, attributable to the nature of services provided and their central role in the economy, restricts the direct applicability of re-

search methodology to other industries. Neither the regulatory environment nor the variable measurements transfer directly. In addition, this analysis is limited by the inability to capture regulatory evaluation results. While Sheshunoff rankings proxy for the overall bank rating assigned by examiners, Sheshunoff rankings derive from publicly available financial information. These rankings do not benefit from the on-site gathering of private financial and non-financial data which informs regulatory examinations.

CONCLUSION

In summary, we believe regulators, bank managers, and owners have cost incentives to reduce regulatory attention. Regulators, concerned about cost budgets and political exposure, have an incentive to take advantage of signaling mechanisms that indicate that the banks self-reported information is credible. Bank managers, interested in signaling that their financial reports

and control systems are reliable, hire high quality auditors to indicate as much. If regulators recognize the incremental value that a high quality auditor provides, regulators may rely more on, and make an improved evaluation of the bank's management control system.

The findings are also important because they suggest that auditing, to some extent, could substitute for regulatory review. While auditors safeguard the interests of owners and regulators safeguard the interests of the depositors and dependents of the total banking system, these interests are aligned in that they ultimately focus on the bank as a going concern. Our empirical results suggest that audit quality (proxied by auditor size) positively influences regulators' assessment of banks' safety and soundness. To the extent that audit effort can substitute for regulatory effort, an opportunity exists to reduce costly redundant work performed by auditors and regulators.

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